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PATENT

Docket No. 1232-4396US1

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

UTILITY APPLICATION AND APPLICATION FEE TRANSMITTAL (1.53(b))

ASSISTANT COMMISSIONER FOR PATENTS
Box Patent Application
Washington, D.C. 20231

Sir:

Transmitted herewith for filing is the patent application of

Named Inventor(s) and
Address(es):

SHIGEO SUZUKI

For:

TRANSMITTING METHOD, RECEIVING METHOD, TRANSMITTING APPARATUS,

RECEIVING APPARATUS, TRANSMITTING SYSTEM AND MEDIUM

Enclosed are:

☒ 22 page(s) of specification, 1 page(s) of Abstract, 6 page(s) of claims

☐ 4 sheets of drawing ☒ formal ☐ informal

☒ 5 page(s) of Declaration and Power of Attorney

☐ Unsigned

☐ Newly Executed

☒ Copy from prior application

☐ Deletion of inventors including Signed Statement under 37 C.F.R. § 1.63(d)(2)

☒ Incorporation by Reference: The entire disclosure of the prior application (Serial No. 08/978,072 filed November 25, 1997), from which a copy of the combined declaration and power of attorney is supplied herein, is considered as being part of the disclosure of the accompanying application and is incorporated herein by reference.

☐ Microfiche Computer Program (Appendix)

☐ page(s) of Sequence Listing

☐ computer readable disk containing Sequence Listing

☐ Statement under 37 C.F.R. § 1.821(f) that computer and paper copies of the Sequence Listing are the same

- ☐ Claim for Priority
- ☐ Certified copy of Priority Document(s)
- ☐ English translation documents
- ☒ Information Disclosure Statement
- ☒ Copy of 7 cited references
- ☐ Copy of PTO-1449 filed in parent application serial No. _____.
- ☒ Preliminary Amendment
- ☒ Return receipt postcard (MPEP 503)
- ☒ Assignment Papers (assignment cover sheet and assignment documents)
- ☐ A check in the amount of \$40.00 for recording the Assignment.
- ☒ Assignment papers filed in parent application Serial No. 08/978,072.
- ☐ Certification of chain of title pursuant to 37 C.F.R. § 3.73(b).
- ☒ This is a ☒ continuation ☐ divisional ☐ continuation-in-part (C-I-P) of prior application Serial No. 08/978,072.
- ☐ Cancel in this application original claims _____ of the parent application before calculating the filing fee. (At least one original independent claim must be retained for filing purposes.)
- ☒ A preliminary Amendment is enclosed. (Claims added by this Amendment have been properly numbered consecutively beginning with the number following the highest numbered original claim in the prior application.
- ☒ The status of the parent application is as follows:
- ☐ A Petition For Extension of Time and a Fee therefor has been or is being filed in the parent application to extend the term for action in the parent application until _____.
- ☐ A copy of the Petition for Extension of Time in the co-pending parent application is attached.
- ☒ No Petition For Extension of Time and Fee therefor are necessary in the co-pending parent application.
- ☐ Please abandon the parent application at a time while the parent application is pending or at a time when the petition for extension of time in that application is granted and while this application is pending has been granted a filing date, so as to make this application co-pending.
- ☐ Transfer the drawing(s) from the patent application to this application.
- ☒ Amend the specification by inserting before the first line the sentence:
This is a ☒ continuation ☐ divisional ☐ continuation-in-part of co-pending application Serial No. 08/978,072 filed November 25, 1997.

I. CALCULATION OF APPLICATION FEE (For Other Than A Small Entity)

					Basic Fee
	Number Filed		Number Extra	Rate	\$690.00
Total Claims	15	-20=	0	x\$18.00	\$
Independent Claims	5	-3=	2	x\$78.00	\$156.00
Multiple Dependent Claims					
	[] yes		Additional Fee =		\$260.00
	[Add'l Fee =		NONE
					\$
X] no					

Total: \$846.00

- ☐ A statement claiming small entity status is attached or has been filed in the above-identified parent application and its benefit under 37 C.F.R. § 1.28(a) is hereby claimed. Reduced fees under 37 C.F.R. § 1.9(F) (50% of total) paid herewith \$ _____.
- ☒ A check in the amount of \$846.00 in payment of the application filing fees is attached.
- ☐ Charge Fee(s) to Deposit Account No. 13-4500. Order No. _____. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.
- ☒ The Assistant Commissioner is hereby authorized to charge any additional fees which may be required for filing this application, or credit any overpayment to Deposit Account No. 13-4500, Order No. 1232-4396US1. A DUPLICATE COPY OF THIS SHEET IS ATTACHED.

Respectfully submitted,

MORGAN & FINNEGAN, L.L.P.

Dated: March 24, 2000

By:

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : SHIGEO SUZUKI Group Art Unit: To Be Assigned
Serial No. : To Be Assigned Examiner: To Be Assigned
Filed : March 24, 2000
For : TRANSMITTING METHOD, RECEIVING METHOD, TRANSMITTING
APPARATUS, RECEIVING APPARATUS, TRANSMITTING SYSTEM AND
MEDIUM

EXPRESS MAIL CERTIFICATE

Express Mail Label No. EJ606940983US

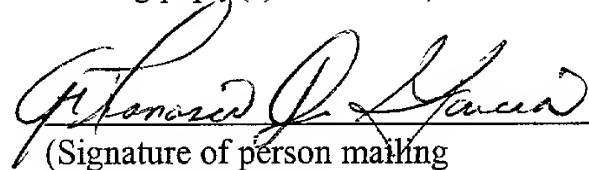
Date of Deposit MARCH 24, 2000

I hereby certify that the following attached paper(s) or fee:

1. Utility Application And Application Fee Transmittal (1.53(b)) with copy of same and check for \$846.00;
2. Specification (22 pages), Claims (6 pages, claims 1-19) and Abstract (1 page);
3. Four (4) sheets of formal drawings;
4. Copy of executed Combined Declaration And Power Of Attorney For Original, Design, National Stage Of PCT, Supplemental, Divisional, Continuation Or Continuation-In-Part Application from prior application;
5. Copy of executed Assignment Of Patent Rights For The United States from prior application;
6. Information Disclosure Statement with copy of same;
7. Information Disclosure Citation Form PTO-1449 with seven (7) references
8. Preliminary Amendment; and
9. Return Receipt Postcard

is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated above and is addressed to the Assistant Commissioner for Patents, Washington, D.C. 20231.

FRANCISCO J. GARCIA
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Shigeo Suzuki Group Art Unit: To Be Assigned
Serial No. : To Be Assigned Examiner : To Be Assigned
Filed : March 24, 2000
For : ***TRANSMITTING METHOD, RECEIVING METHOD,
TRANSMITTING APPARATUS, RECEIVING APPARATUS,
TRANSMITTING SYSTEM AND MEDIUM***

PRELIMINARY AMENDMENT

Assistant Commissioner for Patents and Trademarks
Washington, D.C. 20231

Sir:

Prior to examination on the merits of the above application, please amend the
above-identified application as follows:

IN THE TITLE:

Please change the title to read --A SECURE MEDIA ON DEMAND SYSTEM
WHEREBY CHARGE IS DETERMINED IN PART FROM THE PERIODICITY OF AN
ENCRYPTION KEY--.

IN THE CLAIMS:

Please cancel claims 2-19.

Please add the following new claims:

20. (New) A transmitting method comprising the steps of:

changing, in case of transmitting encoded data which has been encoded to a receiving side, the encoding in a predetermined unit; and

performing recording according to the number of requirements, from the receiving side, of information concerning decoding of the encoded data, for charges.

21. (New) A method according to claim 20, wherein the encoded data is the data obtained by encoding data including image and audio.

22. (New) A method according to claim 20, wherein the predetermined unit is a predetermined time unit.

23. (New) A method according to claim 20, wherein the encoding is performed in a symmetrical key encoding method.

24. (New) A method according to claim 20, wherein the recording according to the requirement relates to charge information concerning utilization of the encoded data.

25. (New) A receiving method comprising the steps of:
receiving encoded data which has been encoded, from a transmitting side;

requiring information concerning decoding of the encoded data, to the transmitting side, when the reception and decoding of the encoded data are continued; and

decoding the encoded data by using the obtained information concerning the decoding.

26. (New) A method according to claim 25, wherein the encoded data is the data obtained by encoding data including image and audio.

27. (New) A method according to claim 25, wherein the encoded data which has been encoded is the encoded data of which encoding method has been changed in a predetermined time unit.

28. (New) A method according to claim 25, wherein the encoding is performed in a symmetrical key encoding method.

29. (New) A method according to claim 25, wherein the requirement is based on user's instructions.

30. (New) A method according to claim 29, wherein the requirement continuously issues the requirement to the transmitting side every predetermined unit time while a user wishes use, and stops issuing the requirement when the user terminates the use.

31. (New) A method according to claim 30, wherein it is possible to change by recording from what time and how many keys changed every predetermined unit time were transmitted.

32. (New) A storing medium for storing, in a computer readable state, the steps of:
changing, in case of transmitting encoded data which has been encoded to a receiving side, the encoding in a predetermined unit; and

performing recording according to the number of requirements, from the receiving side, of information concerning decoding of the encoded data, for charges.

33. (New) A storing medium for storing, in a computer readable state, the steps of:

receiving encoded data which has been encoded, from a transmitting side;
requiring information concerning decoding of the encoded data, to the
transmitting side, when the reception and decoding of the encoded data are continued; and
decoding the encoded data by using the obtained information concerning the
decoding.

Once claims 20-33 have been entered, please cancel claim 1.

REMARKS

Entry of this amendment prior to examination on the merits is respectfully
requested.

Respectfully submitted,

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Transmitting Method, Receiving Method,
Transmitting Apparatus, Receiving Apparatus,
Transmitting System and Medium

5 BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a transmitting
method, a receiving method, a transmitting apparatus, a
receiving apparatus, a transmitting system and a
10 medium.

Related Background Art

Conventionally, in a case where pay service is
provided in such a system as image and audio data are
simultaneously transmitted to a plurality of receivers
15 by using digital transmitting media as described above,
for example, it is a general method in which a service
providing side provides only a watching and listening
person (to be referred as audience hereinafter) who
paid a fixed watching and listening fee, with
20 information (network address and port number of
transmitter, password using at connection, and the
like) which allows the audience connecting to a
transmitter. However, in such the method, since data
to be transmitted is generally sent without any process
25 or management such as encoding (or encryption), there
is some fear that the audience who does not pay the
watching and listening fee taps the transmitted data.

In order to eliminate such a problem, it can be supposed to apply a following method which is used in a pay television system or the like. That is, in this method, the service providing side encodes the data to be transmitted in a specific encoding (encryption) system, and then provides a decoding (decipher) means corresponding to this encoding system to the contracted audience. On the other hand, the contracted audience decodes the transmitted data by using the provided decoding means and watches and listens it (e.g., program), and pays a fixed fee in a predetermined method in such the unit as month, year or the like for a contract term. Further, a local fee management system such as, e.g., a video watching and listening fee management system in a hotel has been known.

However, in such the conventional system, the fixed fee is paid for one program, or the fixed fee is paid for the programs in the unit of month or year, whereby the watching and listening fee is fixedly determined irrespective of whether or not the audience actually watches and listens the programs. Therefore, the fee could not be flexibly managed.

SUMMARY OF THE INVENTION

The present invention has been made in consideration of the above-described problems, and an object thereof is to flexibly provide information.

An another object of the present invention is to provide a transmitting method, a receiving method, a transmitting apparatus, a receiving apparatus, a transmitting system and a medium of which data
5 delivering efficiency is high or satisfactory and in which transmitting and/or receiving data are difficult to be tapped.

A further another object of the present invention to be able to flexibly determine and charge,
10 although in a predetermined unit time, a watching and listening fee on the basis of an actual watching and listening time, and to provide a transmitting method, a receiving method, a transmitting apparatus, a receiving apparatus, a transmitting system and a medium in which
15 the transmitting and/or receiving data are difficult to be tapped even in case of using a multicast system or a broadcast system of which delivering efficiency is high.

In order to solve the above-described problems,
20 in the transmitting method according to one embodiment of the present invention, when data which was encoded is transmitted to a receiving side, such the data encoding (or encryption) is changed in a predetermined unit, and recording according to receiving side's
25 requirement of information concerning decoding of the encoded data is performed.

Further, in the receiving method according to

the embodiment of the present invention, the encoded data is received from a transmitting side, the information concerning the decoding of the encoded data is required to the transmitting side, and the encoded data is decoded by using the obtained information relating to the decoding.

A further another object of the present invention is to provide a software which is used to operate a system having such new functions, transmitting and receiving apparatuses which together construct such the system, and a computer which constructs such the system.

The above and other objects, features, and advantages of the present invention will be apparent from the following detailed description and the appended claims in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a block diagram for explaining system structure of an image/audio transmitting system according to an embodiment of the present invention.

Fig. 2 which is composed of Figs. 2A and 2B are flow charts showing a process in which a watching and listening person (to be referred as audience hereinafter) initially requires to start watching and listening, image and audio data are processed and

finally reproduced respectively by a display and a speaker, in the image/audio transmitting system according to the embodiment of the present invention; and

5 Fig. 3 is a flow chart showing a process in case of switching a key in the watching and listening by the audience, in the image/audio transmitting system according to the embodiment of the present invention.

10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

 Fig. 1 is a block diagram for explaining system structure of an image/audio transmitting system according to an embodiment of the present invention. In Fig. 1, reference numeral 200 denotes digital
15 transmitting media such as a LAN, an internet or an ISDN; reference numeral 100 denotes a transmitting system which transmits through the digital transmitting media 200 image and audio data photographed and taken, and image and audio data previously recorded in an HD
20 (hard disk) or a CD-ROM; and 300 denotes a receiving system which receives the image and audio data transmitted through the digital transmitting media 200 and reproduces the received data by using a display and a speaker.

25 Reference numeral 101 denotes a camera apparatus which photographs or takes an image, digitizes the obtained image and outputs a digital

image signal. Reference numeral 102 denotes a microphone which captures and digitizes an audio (or voice). A digitizing mechanism may be integrally provided in these apparatuses or may be independently provided in the form of separate board. Further, these apparatuses may include a data compressing mechanism. In case of including the compressing mechanism, an expanding mechanism corresponding thereto is provided in the receiving system 300. Reference numeral 103 denotes a memory apparatus e.g., a hard disk apparatus (HD) which previously stores the image and audio data. The memory apparatus 103 may be replaced by an apparatus such a CD-ROM. Further, the recorded or stored image and audio data may be compressed data. In case of the compressed data, an expansion mechanism corresponding thereto is provided in the receiving system 300.

Reference numeral 104 denotes an image audio data input unit which selects one, two or all of the camera apparatus 101, the microphone 102 and the HD 103, and inputs the image and audio data from the selected apparatus. It should be noted that such the selecting has been previously performed by a user of the transmitting system 100, i.e., a manager of image and audio transmitting services. Instead of adding the compressing mechanism to the camera apparatus 101 or the microphone 102, or instead of recording the

compressed data in the HD 103, it may be applied structure in which the data compressing mechanism is included in the image/audio data input unit 104.

Reference numeral 105 denotes a key generating unit which continuously generates a key for encoding (or encryption) at a predetermined time interval, and reference numeral 106 denotes a data encoding unit which encodes the image and audio data inputted by said image/audio data input unit 104, by using the key generated by the key generating unit 105. In the present embodiment, it should be noted that a symmetrical key encoding system (DES (data encryption standard), RC or the like) is used as an encoding (or encryption) system of the image and audio data. When the symmetrical key encoding system is used, if the key which was used by the transmitting system 100 for the encoding is not taught by the transmitting system 100, the receiving system 300 can not perform the decoding. Therefore, the manager of the image and audio transmitting services can consider that only a watching and listening person (to be referred as audience hereinafter) to which the key was rendered is watching and listening the transmitted data (i.e., programs). How to render the key to the audience will be described later.

The time interval for generating the key becomes a unit time for watching and listening (to be

referred as watching and listening unit time
hereinafter). Therefore, as the watching and listening
unit time, the user of the transmitting system 100,
i.e., the manager of the image and audio transmitting
5 services may determine an appropriate time (e.g., 30
minutes, 60 minutes or the like) suitable for image and
audio sources.

Reference numeral 107 denotes a data
transmitting unit which transmits the image and audio
10 data encoded by the data encoding unit 106 to the
receiving system 300 through digital transmitting media
200. In consideration of delivering efficiency, a
multicast system such as an IP-multicast or the like or
a broadcast system is used as a data transmitting
15 system. If there is enough room in band widths of the
digital transmitting media 200, the data may be
independently transmitted to each receiving system in a
unicast system.

Reference numeral 108 denotes a key
20 transmitting unit which transmits or transfers the keys
periodically generated by the key generating unit 105,
to the receiving system 300 from which watching and
listening requirement was issued. Such the keys may be
transmitted in a channel same as that for the image and
25 audio data, or in an another channel. Reference
numeral 109 denotes a watching and listening status
recording unit which records watching and listening

status such as a watching and listening start time, a watching and listening time and the like, for each audience.

Reference numeral 110 denotes a watching and
5 listening requirement receiving unit which requires, in accordance with watching and listening requirement from the receiving system 300, that the key generating unit 105 and the key transmitting unit 108 transmits the information concerning the generated key or the like to
10 such the receiving system 300. Further, the watching and listening requirement receiving unit 110 requires that the watching and listening status recording unit 109 records the watching and listening start time and the watching and listening time.

15 Reference numeral 301 denotes a display/speaker which outputs the received information as a visible image and audible sound such that the audience (i.e., user) watches and listens the information. Reference numeral 302 denotes an inputting apparatus such as a
20 mouse or the like which is used to input watching and listening start requirement and watching and listening termination requirement from the audience to the receiving system 300.

Reference numeral 303 denotes a watching and
25 listening requiring unit which periodically issues the watching and listening requirement to the transmitting system 100 at the predetermined time interval in the

watching and listening, on the basis of the watching and listening start or termination requirement from the inputting apparatus 302.

Reference numeral 304 denotes a key receiving unit which receives the key transmitted by the transmitting system 100 in response to the watching and listening requirement from the watching and listening requiring unit 303.

Reference numeral 305 denotes a data receiving unit which receives the encoded (encryption) image and audio data transmitted from the transmitting system 100, through the digital transmitting media 200. Reference numeral 306 denotes a data decoding unit, which decodes the encoded image and audio data received by the data receiving unit 305, by using the key received by the key receiving unit 304. Reference numeral 307 denotes an image/audio data reproducing unit which reproduces the image and audio data decoded by the data decoding unit 306, on the display/speaker 301.

A sequence number is added to the periodically generated key by the key generating unit 105, and the added sequence number is incremented one by one every time the new key is generated. Then, when the data encoding unit 106 performs the encoding by using the key such the key sequence number representing which the key was used for the encoding is added to the encoded

image and audio data in the form of a header.

Therefore, in case of performing the decoding, the data decoding unit 306 checks the added sequence number and then performs the decoding by using the key

5 corresponding to the checked number.

Each of the above-described units can be realized by the combination of each routine of softwares executed by a computer and each device operated based on each routine (e.g., hard disk for
10 recording watching and listening status data in watching and listening status recording unit 109).

As previously described, in order to transmit the key, the key transmitting unit 108 may use the same channel as that for transmitting the image and audio
15 data, or may use the another channel independently.

Further, as previously described, the watching and listening requirement may be transmitted in the channel same as that for the image and audio data, or in the another channel. Furthermore, a telephone line
20 or the like may be used to transmit the requirement.

Subsequently, it will be explained hereinafter a flow beginning from the operation that the audience utilizing the receiving system 300 requires to start the watching and listening, and terminating with the
25 operation that the image and audio data are reproduced by the display/speaker 301, with reference to a flow chart shown in Figs. 2A and 2B.

It should be noted that, prior to issuance of the watching and listening requirement by the receiving system 300, following processes are performed in parallel in the transmitting system 100. That is, in
5 the transmitting system 100, it should be noted that the image and audio data from the previously selected apparatus (i.e., camera apparatus 101, microphone 102 and HD 103) are inputted by the image/audio data input unit 104, and the inputted data is encoded with the
10 data encoding unit 106 by using the key periodically generated by the key generating unit 105 and then transmitted by the data transmitting unit 107 in the multicast system. Therefore, it is structured that, when the receiving system 300 receives multicast
15 address information from the transmitting system 100, the receiving system 300 starts receiving the encoded image and audio data transmitted in the multicast system.

In a step S500, the audience operates the
20 inputting apparatus 302 to require the watching and listening start. Then, in a step S501, the watching and listening requiring unit 303 issues the watching and listening requirement to the transmitting system 100. At this time, audience information section, name,
25 E-mail address and the like), a network address (host name, IP address or the like) and the information representing the watching and listening start

requirement are added together and issued as arguments.
The issuing is performed also in the communication
through the digital transmitting media 200, and is
generally performed by using a reliable protocol such
5 as a TCP/IP or the like.

Subsequently, in a step S502, the watching and
listening requirement receiving unit 110 in the
transmitting system 100 receives the watching and
listening requirement, and also accepts argument
10 information. Then, in a step S503, the transmitting
system 100 judges whether the requirement was issued at
the watching and listening start time or in the actual
watching and listening, by checking the argument
information. In this case, since the requirement was
15 issued at the watching and listening start time, a step
S504 results in "YES" and the flow advances to a step
S505.

In the step S505, the watching and listening
requirement receiving unit 110 requires the key
20 generating unit 105 and the key transmitting unit 108
to transmit the key which is being used, a next key
changing time and multicast address information to the
receiving system 300. Then, the key generating unit
105 and the key transmitting unit 108 which received
25 such the requirement transmit the key being used, the
next key changing time and the multicast address
information to the receiving system 300. Such the

transmitting is also performed by using the TCP/IP or the like, but may be performed by using an another method. In this case, in order to prevent tapping, it is necessary to encode the key by using a generally
5 utilized non-symmetrical key encoding system such as an RSA (Ron Rivest, Adi Shamir, Leonard Adleman) system or the like. Further, for example, when the key being used is changed to the newly generated key 14 minutes after to perform the encoding, the next key changing
10 time may be expressed as "14 minutes".

Subsequently, in a step S506, the watching and listening requirement receiving unit 110 requires the watching and listening status recording unit 109 to add the audience information as the arguments, such that
15 the watching and listening start time and the watching and listening time of the audience who utilizes the receiving system 300 are recorded. Then, the watching and listening status recording unit 109 which received such the requirement records the use start time of the
20 key being used, as the audience's watching and listening start time rendered by the argument, and further records one watching and listening unit time as the watching and listening time. As described above, the watching and listening start time and the watching
25 and listening time for each audience are recorded in the unit of watching and listening unit time.

Since the processes in these steps S505 and

S506 are independently performed, these processes may be performed in parallel by utilizing a multi-task (or multi-threading) mechanism or the like of an OS (operating system).

5 Subsequently, in a step S507, the receiving system 300 receives the key being used, the next key changing time and the multicast address information transmitted from the transmitting system 100, by using the key receiving unit 304. In a step S508, the key
10 receiving unit 304 renders the key to the data decoding unit 306, the next key changing time to the watching and listening requiring unit 303, and the multicast address information to the data receiving unit 305, respectively.

15 The data receiving unit 305 to which the multicast address information was rendered starts receiving the encoded image and audio data from the transmitting system 100, by setting a multicast address, and repeats the receiving process every time
20 the data is received until the watching and listening termination requirement from the audience is inputted. The encoded image and audio data which were received are sequentially transferred to the data decoding unit 306. Then, the data decoding unit 306 performs the
25 decoding process on the encoded image and audio data by using the key rendered in the step S508. In this case, the unit 306 performs the decoding process by using the

key coincident with the sequence number added to the encoded image and audio data, and then sequentially transfers the decoded image and audio data to the image/audio data reproducing unit 307. The image/audio data reproducing unit 307 sequentially reproduces the image and audio data by using the display/speaker 301.

On the other hand, the watching and listening requiring unit 303 to which the next key changing time was rendered calculates an issuance time of the next watching and listening requirement on the basis of the rendered information. Then, the watching and listening requiring unit 303 is set such that the unit 303 is automatically re-initiated at the calculated next watching and listening requirement issuance time, and then the process is once interrupted. It should be noted that the next watching and listening requirement issuance time is set slightly before the next key changing time (i.e., about one to two minutes before). In this case, it is necessary to set the next watching and listening requirement issuance time at least before the watching and listening requiring unit 303 issues the requirement, the key receiving unit 304 receives the key and renders it to the data decoding unit 306, and then decoding preparation is completed.

Since a series of processes by the data receiving unit 305, the data decoding unit 306 and the image/audio data reproducing unit 307 and the process

by the watching and listening requiring unit 303 can be independently performed in parallel, it is desirable that these processes are realized or performed by utilizing the multi-task (or multi-threading) mechanism or the like of the OS.

Subsequently, a flow in the process when the key is changed or switched in the watching and listening will be explained with reference to the flow charts shown in Figs. 2A, 2B and 3. When the watching and listening requiring unit 303 is automatically re-initiated at the next watching and listening requirement issuance time by a timer mechanism or the like of the OS, it is checked in a step S600 of Fig. 3 whether or not there is an input representing watching and listening termination (or finish) from the inputting apparatus 302. In order to do so, an end flag (its initial value "OFF") is prepared in the watching and listening requiring unit 303. Then, if there is the input representing the watching and listening termination from the inputting apparatus 302, the end flag is set as "ON". Thus, if the end flag is checked in the step S600, it becomes possible to check whether or not there is the input representing the termination.

When there is the input representing the termination, it is judged that the audience wishes to terminate the watching and listening, whereby the flow advances to a step S601 and then to a step S610. In

the step S610, the watching and listening requiring unit 303 requires the data receiving unit 305 to terminate the data receiving, and then the data receiving unit 305 which accepted such the requirement
5 terminates the receiving process.

On the other hand, when there is no input representing the termination, it is judged that the audience wishes to continue the watching and listening, whereby the flow advances to the step S601 and then to
10 a step S602. In the step S602, the watching and listening requiring unit 303 issues or transmits the watching and listening requirement to the transmitting system 100. At this time, as the arguments, the audience information (section, name or E-mail address,
15 i.e., information capable of identifying user), the information representing that the requirement was issued in the watching and listening, and the next-key sequence number (i.e., current-key sequence number +1) are added together and issued. Then, the flow advances
20 to the step S502 in Figs. 2A and 2B.

In the step S502, the watching and listening requirement receiving unit 110 in the transmitting system 100 receives the watching and listening requirement and also accepts the argument information.
25 Then, in the step S503, it is judged by checking the argument information whether the requirement was issued at the watching and listening start time or in the

actual watching and listening. In this case, since the requirement was issued in the actual watching and listening, the step S504 results in "NO" and the flow advances to a step S520.

5 In the step S520, the watching and listening requirement receiving unit 110 requires the key generating unit 105 and the key transmitting unit 108 to transmit the key and the next key changing time indicated by the sequence numbers of the arguments to
10 the receiving system 300. Then, the key generating unit 105 and the key transmitting unit 108 which received the requirement transmit the key and the next key changing time indicated by the sequence numbers of the arguments of the receiving system 300. In order to
15 do so, it is necessary for the key generating unit 105 to prepare the new key before the key for the data encoding is actually changed (i.e., until watching and listening requirement is received from receiving system). Further, in order to prepare for the
20 requirement issued at the watching and listening start time, until the encoding by the generated key itself terminates, it is necessary for the key generating unit 105 to hold such the key.

 Then, in a step S521, the watching and
25 listening requirement receiving unit 110 requires the watching and listening status recording unit 109 to add the audience information as the arguments, such that

the audience utilizing the receiving system 300 records that the watching and listening is performed in the next watching and listening unit time. The watching and listening status recording unit 109 which received
5 the requirement adds and records the audience's watching and listening time received as the argument, by one watching and listening unit time.

Since these steps S520 and S521 are independently performed, these processes may be
10 performed in parallel by utilizing the multi-task (or multi-threading) mechanism or the like of the OS.

Subsequently, in a step S522, the receiving system 300 receives the key and the next key changing time transmitted from the transmitting system 100, by
15 using the key receiving unit 304. In a step S523, the key receiving unit 304 renders the key to the data decoding unit 306 and the next key changing time to the watching and listening requiring unit 303, respectively. The following processes are
20 substantially the same as those in the above-described processed at the watching and listening start time.

As explained above, according to the present embodiment, although in the predetermined unit time, a watching and listening fee can be flexibly determined
25 and charged on the basis of the actual watching and listening time. Also, the transmitting and/or receiving data can be made difficult to be tapped even

in case of using the multicast system or the broadcast system both of which delivering efficiency is high.

Further, as apparent from the above-described explanation, according to the present embodiment, the
5 above-described processes can be performed without providing any specific hardware.

Furthermore, the object of the present invention can be achieved by supplying a storing medium which stores program codes of a software to realize the
10 above-described embodiment to the system or the apparatus, and then by reading and executing the program codes stored in the storing medium with a computer (CPU or MPU) in the above system or the apparatus.

15 In this case, the program codes themselves read from the storing medium realize the functions of the above-described embodiment. Thus, the storing medium which stores such the program codes is included in the present invention.

20 As such the storage medium for storing the program codes, e.g., a floppy disk, a hard disk, an optical disk, a magneto-optical disk, a CD-ROM, a CD-R, a magnetic tape, a nonvolatile memory card, a ROM or the like can be used.

25 Further, needless to say, it is included in the scope of the present invention a case where the program codes read from the storing medium are stored or

written into a memory provided for a function expansion board inserted in the computer or a function expansion unit connected to the computer and, after that, a CPU or the like provided for the function expansion board
5 or the function expansion unit executes a part or all of the actual processes on the basis of instructions of the program codes, and the functions of the above-described embodiment are realized by such the processes.

10 As explained above, according to the present embodiment, it can be provided the transmitting method and the receiving method which are suitable for the case where the watching and listening fee is flexibly determined and charged on the basis of the
15 predetermined actual watching and listening time. Further, it can be derived the specific effect that the transmitting and/or receiving data can be made difficult to be tapped even in case of using the multicast system or the broadcast system of which
20 delivering efficiency is high.

The present invention can be variously modified and varied within the spirit and scope of the appended claims.

WHAT IS CLAIMED IS:

1. A transmitting method comprising the steps
of:

changing, in case of transmitting encoded data
5 which has been encoded to a receiving side, an encoding
method in a predetermined unit; and

performing recording according to requirement,
from the receiving side, of information concerning
decoding of the encoded data.

10

2. A method according to Claim 1, wherein the
encoded data is the data obtained by encoding data
including image and audio.

15

3. A method according to Claim 1, wherein the
predetermined unit is a predetermined time unit.

20

4. A method according to Claim 1, wherein the
encoding is performed in a symmetrical key encoding
method.

25

5. A method according to Claim 1, wherein the
recording according to the requirement relates to
charge information concerning utilization of the
encoded data.

6. A receiving method comprising the steps of:

receiving encoded data which has been encoded,
from a transmitting side;

requiring information concerning decoding of
the encoded data, to the transmitting side; and

5 decoding the encoded data by using the obtained
information concerning the decoding.

7. A method according to Claim 6, wherein the
encoded data is the data obtained by encoding data
10 including image and audio.

8. A method according to Claim 6, wherein the
encoded data which has been encoded is code data of
which encoding method has been changed in a
15 predetermined time unit.

9. A method according to Claim 6, wherein the
encoding is performed in a symmetrical key encoding
method.

20

10. A method according to Claim 6, wherein the
requirement is based on user's instructions.

11. A transmitting system comprising:
25 a transmitting system includes,

 image/audio data input means for
inputting image and audio data,

key generating means for generating a
key for new encoding at a predetermined time interval,
by using a key encoding system,

5 data encoding means for encoding the
image and audio data inputted by said image/audio data
input means, in the encoding system by using the key
generated by said key generating means,

10 data transmitting means for
transmitting the image and audio data encoded by said
data encoding means, to a receiving system through
digital transmitting media,

15 key transmitting means for transmitting
information according to the key generated by said key
generating means, to the receiving system from which
watching and listening requirement was issued, and

recording means for recording
information according to the watching and listening
requirement, for each watching and listening person;
and

20 said receiving system includes,

watching and listening requiring means
for issuing the watching and listening requirement to
said transmitting system at predetermined time
interval, in accordance with requirement from the
25 watching and listening person,

receiving means for receiving
information according to the key transmitted by said

transmitting system in response to the watching and listening requirement by said watching and listening requiring means, and

5 data decoding means for receiving the encoded image and audio data transmitted from said transmitting system through the digital transmitting media, decoding the received data by using the information received by said receiving means, and outputting the decoded data.

10

12. A system according to Claim 11, wherein said data transmitting means transmits the image and audio data after encoding them by using a symmetrical key encoding system.

15

13. A system according to Claim 11, wherein said key transmitting means stops transmitting the key when there is no watching and listening requirement from said receiving system.

20

14. A system according to Claim 11, wherein said watching and listening requiring means continuously issues the watching and listening requirement to said transmitting system every
25 predetermined unit time while the watching and listening person wishes the watching and listening, and stops issuing the watching and listening requirement

when the watching and listening person terminates the watching and listening.

15. A system according to Claim 11, wherein
5 said transmitting system is capable of charging by recording from what time and how many the keys changed every predetermined unit time were transmitted.

16. A transmitting apparatus comprising:
10 transmitting means for transmitting encoded data which has been encoded, to a receiving side;
changing means for changing the encoding in a predetermined unit; and
recording means for performing recording
15 according to requirement, from the receiving side, of information concerning decoding of the encoded data.

17. A receiving apparatus comprising:
receiving means for receiving encoded data
20 which has been encoded, from a transmission side;
requiring means for requiring information concerning decoding of the encoded data, to the transmitting side; and
decoding means for decoding the encoded data by
25 using the obtained information concerning the decoding.

18. A storing medium for storing, in a

computer readable state, the steps of:

changing, in case of transmitting encoded data which has been encoded to a receiving side, an encoding method in a predetermined; and

- 5 performing recording according to requirement, from the receiving side, of information concerning decoding of the encoded data.

19. A storing medium for storing, in a
10 computer readable state, the steps of:

receiving encoded data which has been encoded, from a transmitting side;

requiring information concerning decoding of the encoded data to the transmitting side; and

- 15 decoding the encoded data by using the obtained information concerning the decoding.

ABSTRACT OF THE DISCLOSURE

An object of the invention is to provide a transmitting system of which data is difficult to be tapped and which is suitable for flexibly determining a watching and listening fee. In order to achieve the object, there is provided a combination of a transmitting method comprising steps of, transmitting encoded data which has been encoded, to a receiving side, changing the encoding in a predetermined unit, and performing recording according to requirement, from the receiving side of information concerning decoding of the encoded data, and a receiving method comprising steps of, receiving the encoded data which has been encoded, from a transmitting side, requiring the information concerning the decoding of the encoded data, to the transmitting side, and decoding the encoded data by using the obtained information concerning the decoding.

FIG. 2A

FIG. 2

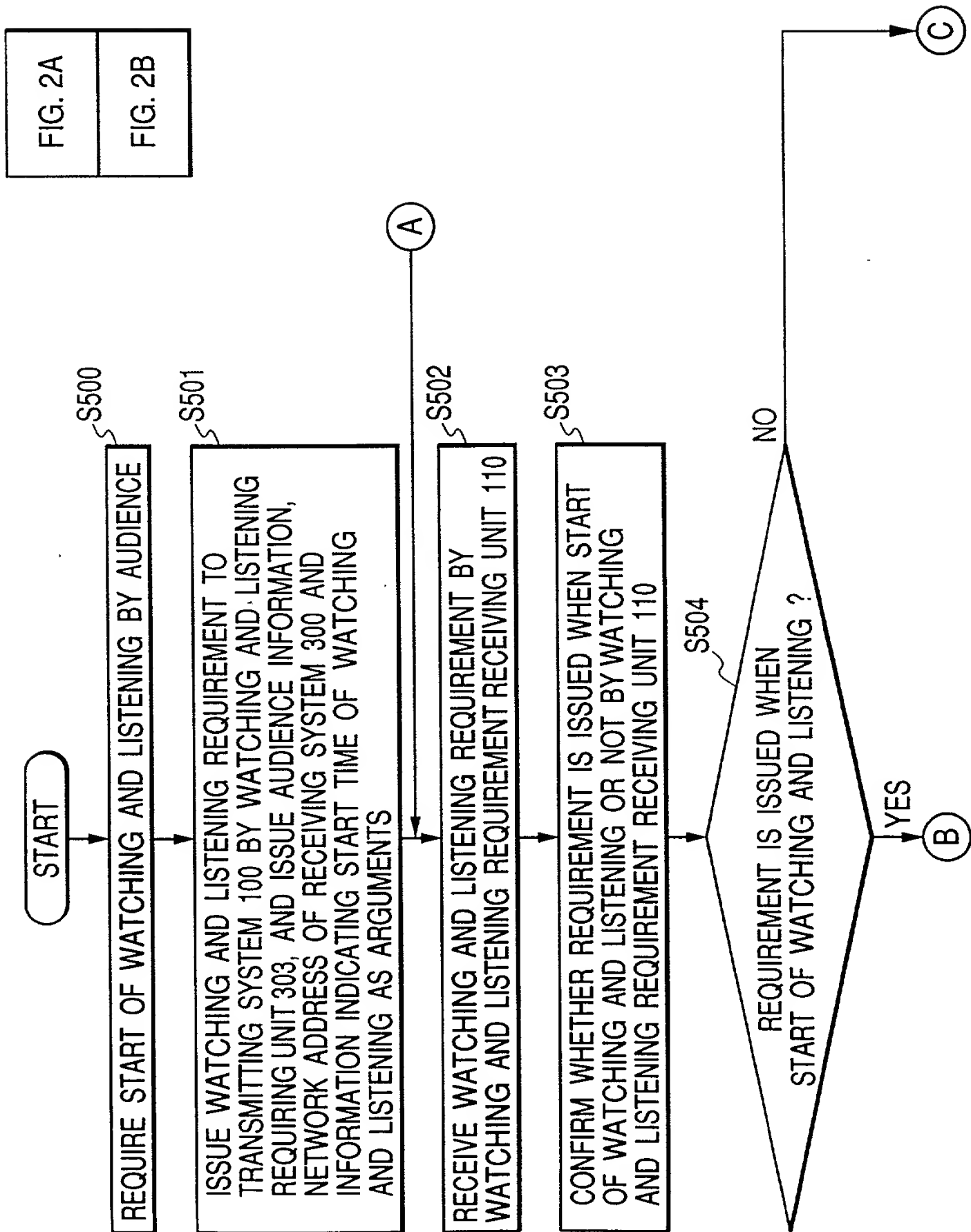


FIG. 2B is a flowchart illustrating a process for receiving and transmitting data. The process starts at step S505, where a requirement for watching and listening is received from unit 110. This is followed by step S506, where a requirement for receiving unit 110 is generated and transmitted to unit 108. Step S507 involves generating a key and transmitting it to unit 108. Step S508 involves receiving a key and transmitting it to unit 108. The process ends at step S523, where a key is received from unit 108.

FIG. 2B

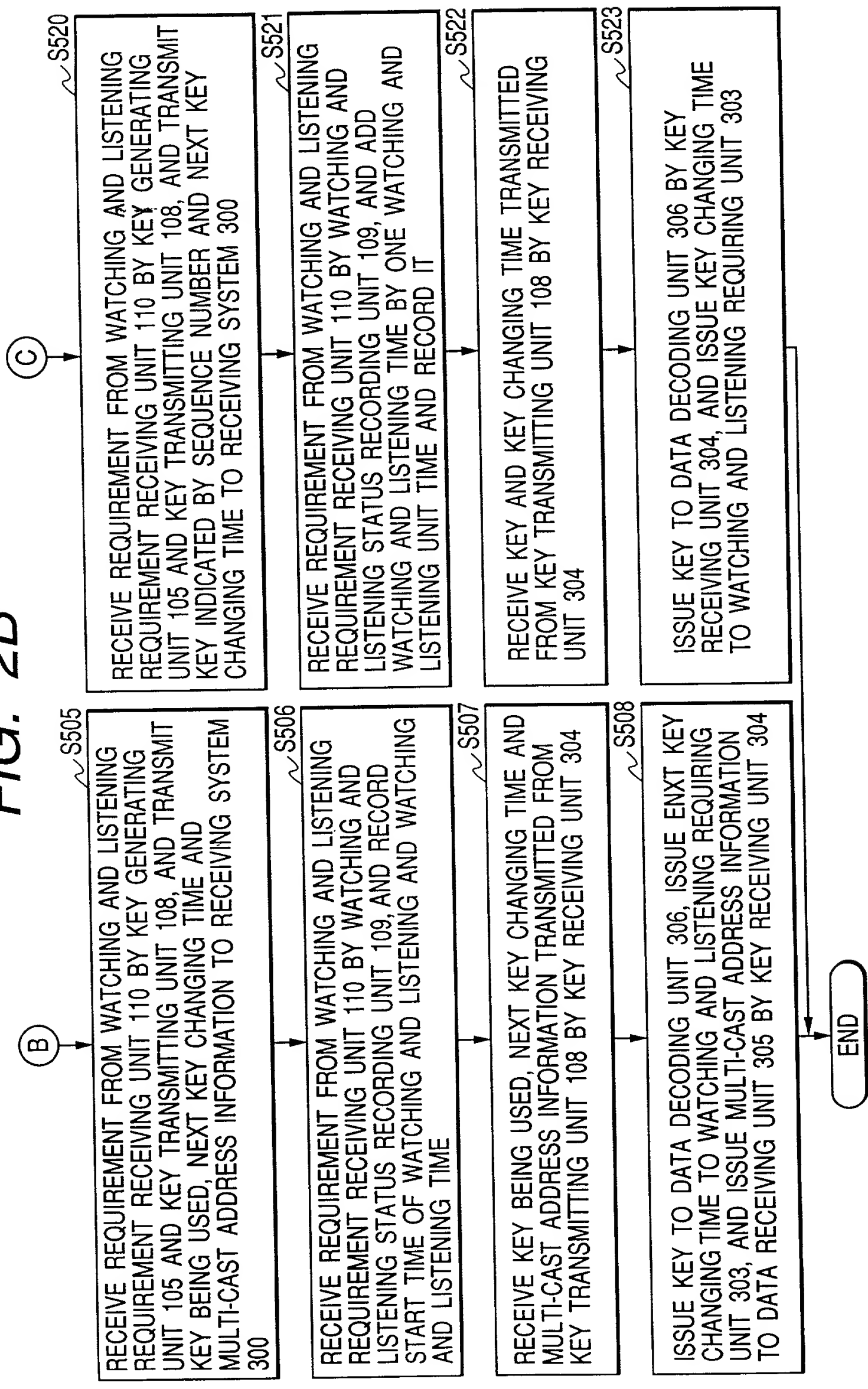
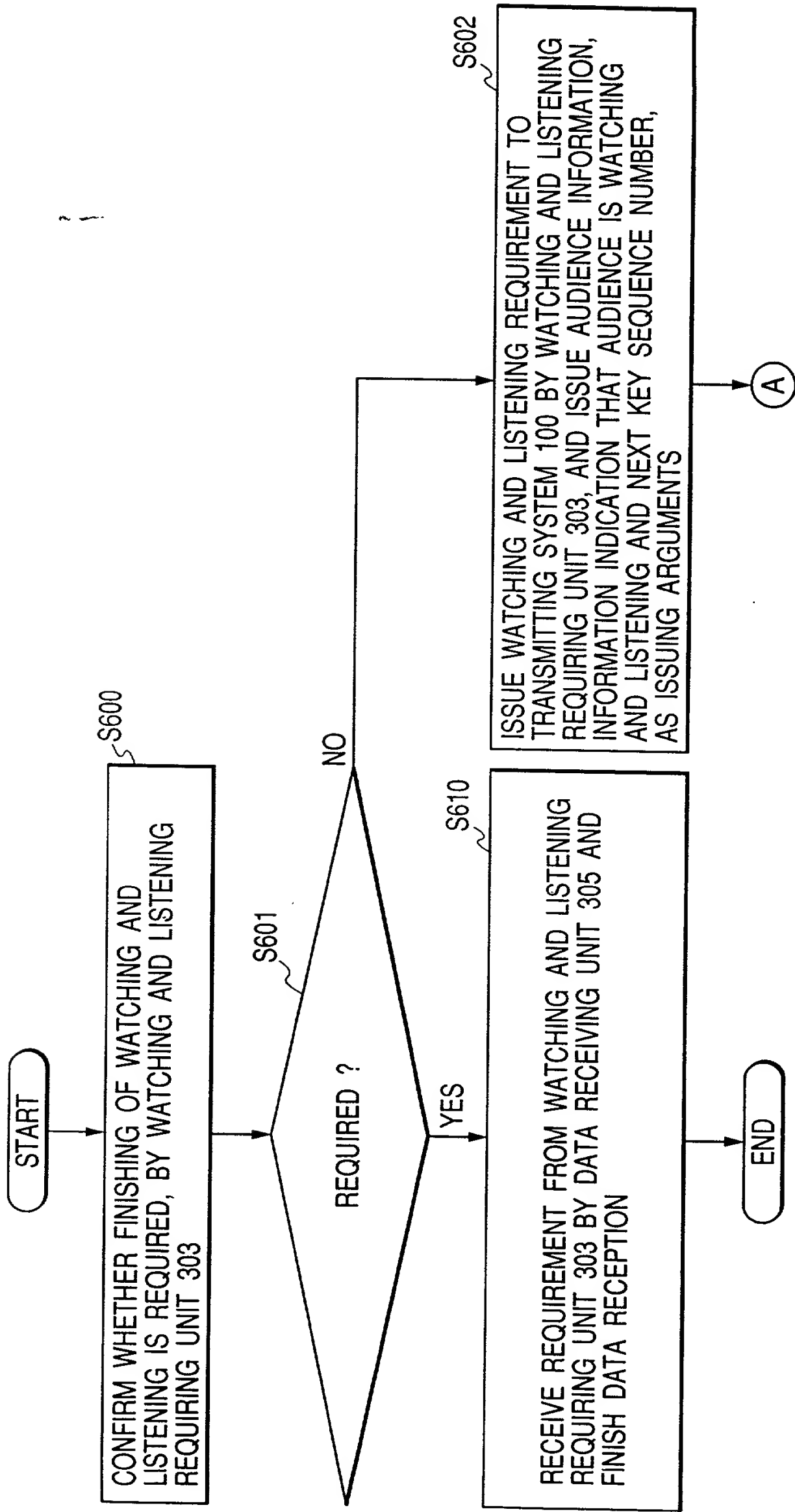


FIG. 3



COPY

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**COMBINED DECLARATION AND POWER OF ATTORNEY FOR
ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL,
DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART APPLICATION**

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

TRANSMITTING METHOD, RECEIVING METHOD, TRANSMITTING APPARATUS,
RECEIVING APPARATUS, TRANSMITTING SYSTEM AND MEDIUM
the specification of which

- a. ☐ is attached hereto
- b. ☒ was filed on November 25, 1997 as application No. 08/978,072
and was amended on _____. (if applicable).

PCT FILED APPLICATION ENTERING NATIONAL STAGE

- c. ☐ was described and claimed in International Application No. _____ filed on _____ and
as amended on _____. (if any).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

☒ I hereby claim foreign priority benefits under Title 35, United States Code § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

☐ The attached 35 U.S.C. § 119 claim for priority for the U.S. application(s) listed below forms a part of this declaration.

<u>Country</u>	<u>Application Number</u>	<u>Date of filing (day, month, yr)</u>	<u>Date of issue (day, month, yr)</u>	<u>Priority Claimed</u>
JAPAN	8-319502	29 November 1996		<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO
				<input type="checkbox"/> YES <input type="checkbox"/> NO

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ADDITIONAL STATEMENTS FOR DIVISIONAL, CONTINUATION OR CONTINUATION-IN-PART

I hereby claim the benefit under Title 35, United States Code § 120 of any United States application(s) listed below.

Application Serial No.	Filing Date	Status (patented, pending, abandoned)
Application Serial No.	Filing Date	Status (patented, pending, abandoned)

[] In this continuation-in-part application, insofar as the subject matter of any of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or Imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

I hereby appoint the following attorneys and/or agents with full power of substitution and revocation, to prosecute this application, to receive the patent, and to transact all business in the Patent and Trademark Office connected therewith: Jerome G. Lee (Reg. No. 16,967), John D. Foley (Reg. No. 16,836), John A. Diaz (Reg. No. 19,550), Thomas P. Dowling (Reg. No. 19,221), John C. Vassil (Reg. No. 19,098), Warren H. Rotert (Reg. No. 19,659), Alfred P. Ewert (Reg. No. 19,887), David H. Pfeffer, P.C. (Reg. No. 19,825), Harry C. Marcus (Reg. No. 22,390), Robert E. Paulson (Reg. No. 21,046), Stephen R. Smith (Reg. No. 22,615), Kurt E. Richter (Reg. No. 24,052), J. Robert Dailey (Reg. No. 27,434), Eugene Moroz (Reg. No. 25,237), John F. Sweeney (Reg. No. 27,471), Arnold I. Rady (Reg. No. 26,601), Christopher A. Hughes (Reg. No. 26,914), William S. Feiler (Reg. No. 26,728), Joseph A. Calvaruso (Reg. No. 28,287), James W. Gould (Reg. No. 28,859), Richard C. Komson (Reg. No. 27,913), Israel Blum (Reg. No. 26,710), Bartholomew Verdirame (Reg. No. 28,483), Maria C. H. Lin (Reg. No. 29,323), Joseph A. DeGirolamo (Reg. No. 28,595), and Christopher E. Chalsen (Reg. No. 30,936) of Morgan & Finnegan whose address is: 345 Park Avenue, New York, New York 10154.

☒ I hereby authorize the U.S. attorneys and/or agents named hereinabove to accept and follow instructions from _____ as to any action to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and/or agents and me. In the event of a change in the person(s) from whom instructions may be taken I will so notify the U.S. attorneys and/or agents named hereinabove.

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I hereby specify the following as the correspondence address to which all communications about this application are to be directed:

SEND CORRESPONDENCE TO:

MORGAN & FINNEGAN, 345 Park Avenue, New York, New York 10154

DIRECT TELEPHONE CALLS TO: _____
(212) 758-4800

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Full name of second joint inventor, if any _____

Inventor's signature* _____ date

Residence _____

Citizenship _____

Post Office Address _____

[] ATTACHED IS ADDED PAGE TO COMBINED DECLARATION AND POWER OF ATTORNEY
FOR SIGNATURE BY THIRD AND SUBSEQUENT INVENTORS FORM.

* Before signing this declaration, each person signing must:

1. Review the declaration and verify the correctness of all information therein; and
2. Review the specification and the claims, including any amendments made to the claims.

After the declaration is signed, the specification and claims are not to be altered.

To the inventor(s):

The following are cited in or pertinent to the declaration attached to the accompanying application:

Title 37, Code of Federal Regulation, §1.56

Duty of disclosure....

(a) A duty of candor and good faith toward the Patent and Trademark Office rests on the inventor, on each attorney or agent who prepares or prosecutes the application and on every other individual who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application. All such individuals have a duty to disclose to the Office information they are aware of which is material to the examination of the application. Such information is material where there is a substantial likelihood that a reasonable examiner would consider it important in deciding whether to allow the application to issue as a patent. The duty is commensurate with the degree of involvement in the preparation or prosecution of the application.

* * * *

c) Any application may be stricken from the files if:

- (1) An oath or declaration ... is signed in blank;
- (2) An oath or declaration ... is signed without review thereof by the person making the oath or declaration;
- (3) an oath or declaration ... is signed without review of the specification, including the claims ...;

or

- (4) The application papers filed in the Office are altered after the signing of an oath or declaration ... referring to those application papers.

Title 35, U.S. Code, § 119

Benefit of earlier filing date in foreign country; right of priority

An application for patent for an inventor filed in this country by any person who has, or whose legal representatives or assigns have, previously regularly filed an application for a patent for the same inventor in a foreign country which affords similar privileges in the case of applications filed in the United States or to citizens of the United States, shall have the same effect as the same application would have if filed in this country on the date on which the application for patent for the same invention was first filed in such foreign country, if the application in this country is filed within twelve months from the earliest date on which such foreign application was filed; but no patent shall be granted on any application for patent for an invention which had been patented or described in a printed publication in any country more than one year before the date of the actual filing of the application in this country, or which had been in public use or on sale in this country more than one year prior to such filing.

Title 35, U.S. Code, § 102

Benefit or earlier filing date in the United States

An application for patent for an invention disclosed in the manner provided by the first paragraph of section 112 of this title in an application previously filed in the United States, or as provided by section 363 of this title, which is filed by an inventor or inventors named in the previously filed application shall have the same effect, as to such invention, as though filed on the date of the prior application, if filed before the patenting or abandonment of or termination of proceedings on the first application or an application similarly entitled to the benefit of the filing date of the first application and if it contains or is amended to contain a specific reference to the earlier filed application.

Title 35, U.S. Code § 101

Inventions patentable

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Title 35 U.S. Code § 102

Conditions for patentability; novelty and loss of right to patent

A person shall be entitled to a patent unless --

- (a) the invention was known or used by others in this country, or patented or described in a printed publication in this country, more than one year prior to the date of the application for patent in the United States, or
- (b) the invention was patented or described in a printed publication in this or foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States, or
- (c) he has abandoned the inventor, or
- (d) the invention was first patented or caused to be patented, or was the subject of an inventor's certificate, by the applicant or his legal representatives or assigns in a foreign country prior to the date of the application for patent in this country on an application for patent or inventor's certificate filed more than twelve months before the filing of the application in the United States, or

* * * *

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent, or

(f) he did not himself invent the subject matter sought to be patented, or

(g) before the applicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other ...

Title 35, U.S. Code § 103

Conditions for patentability; non-obvious subject matter

A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Subject matter developed by another person, which qualifies as prior art only under subsection (f) or (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.

Title 35, U.S. Code § 112 (in part)

Specification

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Please read carefully before signing the Declaration attached to the accompanying Application.

If you have any questions, please contact Morgan & Finnegan